



KEYWORDS: *Petroglyphs – Rock art – Ethnoarchaeology – Northeast India – Manipur*

## PETROGLYPHS OF NORTHEAST INDIA WITH SPECIAL REFERENCE TO MANIPUR: A CRITICAL REVIEW

Jiangampou Kamei

**Abstract.** This paper provides a critical review of the petroglyphs in northeast India, with a particular focus on Manipur. Despite its rich archaeological potential, this region remains underexplored, and its rock art, particularly petroglyphs, is inadequately documented. This review consolidates existing literature and recent discoveries, providing an updated overview of notable petroglyph sites and their cultural significance. It examines key sites in Assam, Mizoram, Meghalaya and Nagaland, with detailed attention to Manipur, to highlight regional variations in motifs and cultural meanings. This paper identifies research gaps, emphasising the need for more extensive fieldwork and interdisciplinary studies. This study concludes by advocating for enhanced preservation efforts and deeper integration of local cultural contexts to enrich the understanding and appreciation of this ancient heritage.

### Introduction

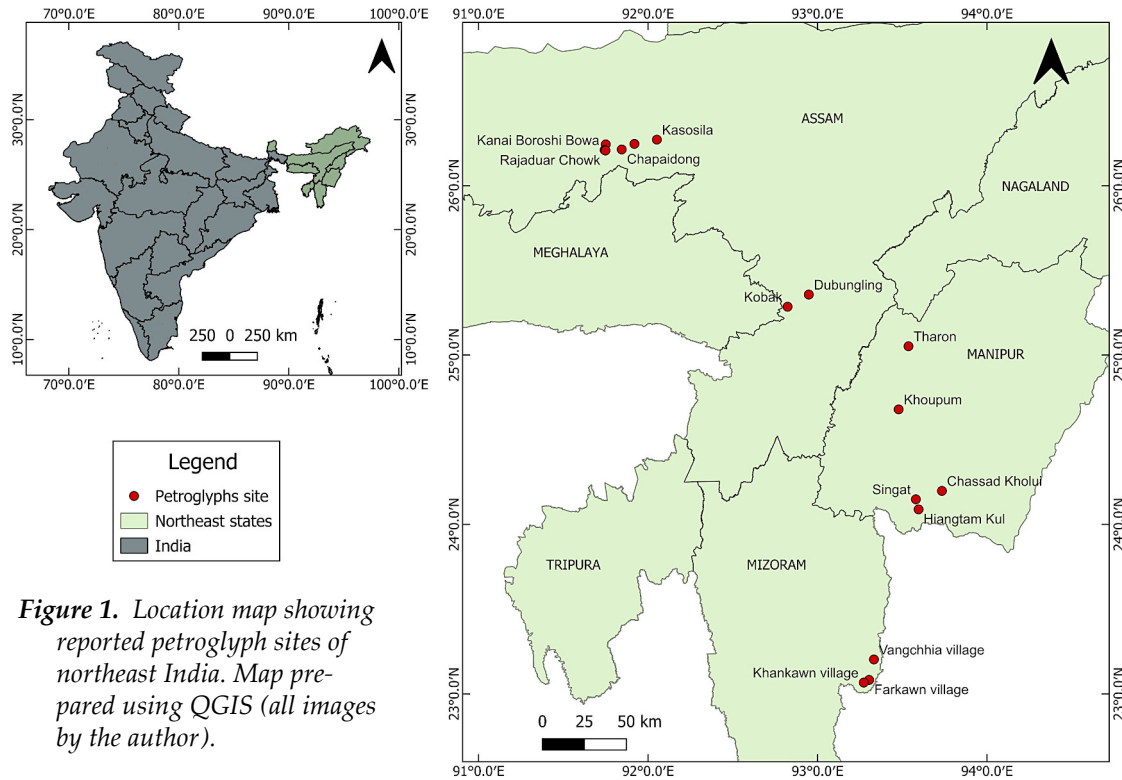
Rock art, encompassing pictograms and petroglyphs, is one of the earliest forms of human expression, sometimes dating back to the Upper Palaeolithic period. This ancient visual medium, classified into iconic and non-iconic forms, offers invaluable insights into early human societies, cultural practices and environmental interactions (Garnayak 2008). The term ‘petroglyph’, derived from the Greek words for rock (*petra*) and to carve (*glýphō*), refers explicitly to images created by the direct alteration of rock surfaces through various methods, such as engraving and pounding (Bednarik 1998). These petroglyphs are artistic expressions and constitute significant archaeological artefacts that provide a window into their creators’ lives, beliefs and environmental relationships.

Rock art has been discovered globally in diverse cultural contexts across Africa, Asia, Australia and Europe, highlighting its universal appeal and significance. India hosts more than 1500 documented rock art sites and roughly 2500 painted shelters, yet the country’s northeast remains among its least-investigated regions. The distribution of Indian rock art spans from Ladakh in the Himalayas to the north, through Kerala and Tamil Nadu in the south, and from Manipur in the east to Barmer in the Thar Desert of Rajasthan in the west (Kumar 2014).

Northeast India is a crucial archaeological region, historically serving as a corridor for human migration from the Palaeolithic to the Neolithic period (Hazarika 2017). Despite this significance, systematic research on petroglyphs in northeast India (Fig. 1) began only

recently. Physical inaccessibility, dense vegetation and limited archaeological infrastructure have hindered sustained investigation (Sundara 2016). Nevertheless, discoveries from Assam, Mizoram, Nagaland, Meghalaya and Manipur reveal a remarkable range of petroglyphs that embody complex symbolic and ritual traditions. These provide valuable insights into ancient religious and cultural narratives, which often depict Hindu deities, temple architecture and intricate natural motifs (Sonawane 2017). However, this does not preclude the presence of pictograms in the region. No significant pictograms have been discovered, possibly due to a lack of focused fieldwork or general interest in rock art.

The present paper aims to (1) consolidate and reassess existing documentation of petroglyphs in northeast India, (2) identify inter- and intra-regional patterns in motif diversity and cultural meanings, and (3) evaluate methodological and preservation challenges, with a particular focus on Manipur. The study adopts ethnoarchaeology as its primary interpretive framework to understand the relationship between the engraved material record and the living cultural traditions of the region. Ethnoarchaeology provides a bridge between archaeology and ethnography, linking past human behaviour with present cultural practices. In Manipur and neighbouring states, many rock engravings are remembered by present communities as the work of their ancestors, preserved in oral traditions, folklore and ritual memory. This continuity between the past and the present allows the ethnographic record to function as a living archive



**Figure 1.** Location map showing reported petroglyph sites of northeast India. Map prepared using QGIS (all images by the author).

that complements archaeological evidence. This approach helps elucidate the social meanings, functions and symbolic logic underlying the petroglyphs of northeast India.

Having established the region's significance and the scope of the present review, the following section synthesises earlier studies of petroglyph documentation across the northeastern states of India.

### Earlier studies on petroglyphs of northeast India

#### Assam

Assam has yielded several notable examples of petroglyphs often near early medieval archaeological remains, including temple ruins, rock-cut sculptures on boulders and ancient rock quarry sites. These sites are generally dated between the 8th and 13th centuries CE (Sanathana and Hazarika 2022). Notable sites in Assam (Table 1) include Kasomari-Jamuguri, where engravings of 'lions', 'elephants', 'weapons' and floral motifs suggest themes of power and reverence. In his 1923 paper, *Carved Monoliths at Jamuguri in Assam*, Hutton compared the stone monuments at Jamuguri with those at Dimapur. Despite considerable differences—such as the absence of the Y-shaped form and the use of carved slabs at Jamuguri—he argues that the Jamuguri monoliths represent a later developmental stage. Hutton posits that by the time the Jamuguri monuments were erected, the influence of Hinduism had begun to spread, leading to the cessation of such carvings (Choudhury 1959; Hutton 1923).

Dirgheswari features foot impressions and floral motifs that might denote ceremonial significance, whereas Kanai Boroshi Bowa is distinguished by intricate female figures and labyrinths, perhaps reflect-

ing gender roles and ritual practices (Bezbaruah and Devi 2016). Kasosila exhibits religious icons such as the Dharmachakra, indicating a society with spiritual and defensive dimensions, possibly influenced by Buddhism. More straightforward sites such as Chapaiddong and Tatimara focus on geometric and symbolic markers such as the mason marks used in spiritual or community gatherings (Table 2).

Rajaduar Chowk and Dubungling feature a diverse array of anthropomorph and symbolic figures, portraying the communities' cultural richness and social intricacies. At Rajaduar Chowk, one of the boulders displays a panel with five engravings, including a 'sword', 'mask', 'dancing figure', 'running figure with a shield' and a 'boat'. These engravings might be individual depictions or part of a composite scene telling a story (Thakuria 2017; Sanathana and Hazarika 2019; Hazarika et al. 2022). Finally, Kobak's mix of anthropomorph, zoomorphic, celestial and floral motifs suggests a deep connection with nature and the cosmos, potentially linked to astronomical or calendrical observances (Thakuria 2017; Deori and Hassan 2019).

The petroglyphs of Assam reveal a complex synthesis of religious symbolism, social expression and artistic experimentation during the early medieval period. The combination of anthropomorphous, zoomorphic and geometric motifs—often found near temple ruins and sculptural remains—suggests that rock art here functioned as an extension of emerging state religion and ritual authority rather than as a purely folk tradition. Themes of power, fertility and cosmology are intertwined, reflecting both local creativity and religious influences such as Buddhism and Hinduism.

### Mizoram

In Mizoram, petroglyphs discovered in Champhai District and nearby regions showcase diverse historical and cultural stories pounded into stone (Table 2). In Farkawn and Khankawn villages, petroglyphs feature human faces, bovine heads and intricate geometric shapes such as circles and semicircles. These depictions are believed to connect to local folklore, suggesting an ethnographic parallel between ancient and contemporary material cultures (Lalhminghluva and Sarkar 2017). The Vangchhia site encapsulates detailed anthropomorphous petroglyphs standing in rows, with a prominent figure holding a spear and wearing a headdress. The zoomorphic figures include *mithun* (*Bos frontalis*), a semi-domesticated bovine, and various birds and fish (Singh 2019).

The petroglyphs at Khawbung depict a chain of anthropomorphous figures led by a central figure holding a harpoon, accompanied by zoomorphic motifs such as 'snakes', 'deer' and 'mithun'. In contrast, the petroglyphs at Sazep Village occur across several localities and include a wide range of images, from anthropomorphous figures in varied postures to diverse animal representations. These images likely function as memorials, commemorating notable individuals and showcasing societal values through symbols of hunting prowess and community feasts (Nayan and Singh 2022). Lianpui's engravings depict decapitated heads alongside revered animals such as *mithun* and hornbills. The range of artefacts represented, from 'weapons' to 'gongs' (a musical instrument), often signifies high social status and accomplishments (Table 2). The petroglyphs at Zote vividly depict local folklore, particularly at the Chawngchhilhi Rul Ngaihna site, where a maiden named Chawng-chilhi and her snake lover are immortalised in stone. This portrayal not only signifies mythological importance but also emphasises the role of storytelling in cultural preservation (Singh 2022).

Mizo culture prominently features various megaliths, such as standing stones, stone seats, platforms and cairns, which are often intricately engraved as part of their feast of merit—a grand community feast symbolising generosity and social prestige. These engravings typically depict anthropomorphous figures such as chiefs and warriors, complete with smoking pipes and warrior garb to signify their roles and statuses, as seen in Zotlang Village, where interconnected anthropomorphs represent collective spiritual protection. Additionally, wildlife images perhaps celebrate hunting accomplishments with depictions of animals such as 'sambar' and 'barking deer', 'tigers', 'snakes', 'elephants' and 'birds'. Engravings of domesticated animals such as 'mithun', 'pigs', 'goats' and 'fowl' highlight the community's food sources and ritual significance, perhaps symbolising wealth and prosperity. Tools and valuables such as 'guns', 'spears', 'shields' and 'gongs' are also engraved into these megaliths, emphasising an individual's social

standing and wealth (Malsawmliana 2019).

The petroglyphs of Mizoram reveal a deeply rooted connection between art, social identity and commemoration. Closely linked with the feast of merit, these engravings might commemorate social achievement and ancestral honour. Common motifs such as anthropomorphs, weapons, animals and geometric designs suggest that rock art was a visual medium for expressing social status, valour and communal pride. In this sense, Mizoram's petroglyphs serve not only as records of ritual activity but also as enduring symbols of social competition, ancestral veneration and communal pride.

### Meghalaya

In Meghalaya, Mitri et al. (2022) discovered petroglyphs at Mualsei Neng Seng in the East Jaintia Hills (Table 1). These petroglyphs, which are found on stone jars and related slabs, feature a variety of motifs, including zoomorphic figures such as 'pigs' and horned *Bos* species, a bird, a human face, and an anthropomorph in a squatting position. The study suggests that these stone jars were likely used in ancient mortuary practices, possibly serving as burial containers and forming part of a ritual space connected to ancestral spirits. While the paper provides comprehensive documentation and some contextual analysis, the exact meanings and interpretations of the petroglyphs remain speculative without more in-depth ethnographic studies to support the archaeological interpretations.

The petroglyphs of Meghalaya, though fewer, reflect a symbolic engagement with death and ancestral veneration. Many are associated with mortuary contexts, suggesting that engraving practices were integral to ritual activities commemorating the dead. The recurring motifs of zoomorphs and anthropomorphs might indicate an enduring belief in the interconnection between the living community and the spirit world.

### Nagaland

In Nagaland, the petroglyphs at Dimapur's monoliths display an array of symbolic and representative motifs, including images of 'elephants', 'tigers' and 'deer' (Table 2). These animals are often depicted in dynamic scenes, such as tigers attacking elephants, potentially symbolising local myths. Additionally, circular motifs likely symbolise celestial bodies such as the sun or moon. Geometric and zigzag patterns, possibly representing 'enemies' teeth', according to Hutton, are similar to designs found on ceremonial tribal wooden posts. Some engravings depict anthropomorphs or organs closely associated with fertility rites and ceremonies to ensure communal prosperity (Hutton 1922).

The petroglyphs in Kigwema village in the Kohima district include a rich blend of anthropomorphs, zoomorphs and geometric patterns. Notably, anthropomorphs are portrayed, including a 'warrior'

Locality/site	State	Altitude	Context	Reference
Kasomari-Jamuguri	Assam	-	Monoliths	Choudhury 1959; Hutton 1923
Dirgheswari	Assam	99 m	On a natural rock surface	Bezbaruah and Devi 2016
Kanai Boroshi Bowa	Assam	62 m	On a natural rock surface	
Rajaduar Chowk	Assam	-	On a natural rock surface	Sanathana and Hazarika 2019
Kasosila	Assam	-	Rock boulder	Hazarika et al. 2022
Chapaidong	Assam	-	Split rock boulder	
Tatimara	Assam	-	On the bank of the Brahmaputra (rock boulder)	
Nuchubunglo	Assam		Stone jars, stone block	Thakuria 2017; Deori and Hassan 2019; Singh et al. 2022
Dubungling	Assam	588 m	Stone jar, broken stone fragments	
Kobak	Assam	-	Stone jars	
Farkawn village	Mizoram	1213 m	Megaliths and natural rock surface	Lalhminghlua and Sarkar 2017
Khankawn village	Mizoram	-	Megaliths and natural rock surface	
Vangchhia village	Mizoram	-	Megaliths and natural rock surface	Singh 2019; Nayan and Singh 2022
Khawbung village	Mizoram	-	Natural rock surface	
Sazep Village	Mizoram	-	Megaliths	
Lianpui village	Mizoram	-	Megaliths and natural rock surface	Singh 2022
Pukzing village	Mizoram	-	Megaliths	Malsawmliana 2019
Lungphunlian	Mizoram	-	Megaliths	
South Sabual village	Mizoram	-	Megaliths	
Lenchim village	Mizoram	-	Megaliths	
Zote village	Mizoram	-	Megaliths and natural rock surface	Singh 2021
N Mualcheng village	Mizoram	-	Megalith	Jenla 2017
Sailulak village	Mizoram	-	Megalith	
Cherhlun Village	Mizoram	-	Megalith	
Mualsei Neng Seng	Meghalaya	-	Stone slabs	Mitri et al. 2022
Dimapur	Nagaland	-	Monoliths	Hutton 1922; Hutton 1926; Vasa and Jamir 2020
Kigwema Village	Nagaland	-	Megalith	
Wakching Village	Nagaland	-	Stone receptacles	
Mokokchung Village	Nagaland	810.5 m	Stone sculpture	Vasa and Jamir 2020
Zhavame Village	Nagaland	-	Stone sculpture	
Intuma Village	Nagaland	-	Natural rock surface	
Khonoma	Nagaland	-	Monolithic human figure	
Peis/Paisa village	Nagaland	-	Natural stone	
Salangthel	Manipur	-	Megaliths	
Pallong	Manipur	-	Natural rock surface	Singh 2020
Phalong Namkao	Manipur	-	Megaliths	
Tamenglong Khunjao	Manipur	-	Megaliths	
Tharon	Manipur	994 m	Megaliths, streambed, natural rock surface	Devi 2017; Singh 2020; Kamei et al. 2024
Khoupum	Manipur	1349 m	Megaliths, natural rock surface	Devi 1988; Singh 2020; Kamei et al. 2024

Chassad Kholui	Manipur	-	Megaliths	Haokip 2021
Singat	Manipur	-	Megaliths	
Hiangtam Kul	Manipur	-	Megaliths	
Behiang	Manipur	-	Megaliths	Suanlian 2024

Table 1. Reported petroglyph sites in northeast India.

possibly symbolising strength and courage. These are accompanied by images of the *mithun* (*Bos frontalis*), highlighting the cultural relevance of the warrior's achievements and feasts. Engravings of weapon (such as spearheads) and tooth-like structures are interpreted symbolically: spearheads are trophies from vanquished enemies, and tooth-like designs are supposed indicators of the warrior's romantic conquests (Hutton 1926; Vasa and Jamir 2020). In the Phek and Peren districts, petroglyphs provide additional cultural insights. A notable feature is the carved sandstone depiction of a human head in Phek, perhaps symbolising victory in headhunting practices. In Peren District's Intuma Village, the engravings include human dancing figures and tooth-like features alongside other geometric designs, such as lozenges and spirals, further enriching the narrative of the region's historical and cultural heritage (Vasa and Jamir 2020).

The petroglyphs of Nagaland demonstrate how rock art became a medium for expressing martial values, fertility and local myths. The recurrent representation of *mithun* and weapon motifs captures the Naga ethos of bravery and social status, while their spatial association with ritual landscapes highlights the integration of warfare, fertility and cosmology.

#### Manipur

In Manipur, petroglyphs are confined mainly to the Zeliangrong (the four cognate tribes: Zeme, Liangmai, Rongmei and Inpui) inhabited areas. One such area is Tharon, which is located in the Tamenglong district and is inhabited by the Liangmai tribe. Several engravings have been found in the streambed and megaliths

(Table 2). The motifs include various anthropomorphs, such as rows of them, footprints, male and female figures, zoomorphs such as buffalo head with the horn, head of *mithun*, head of pig, *mithun* and various geometric figures, such as trapezoidal figures, straight lines, triangles, circles, game patterns and various figures of material culture, such as 'trumpets', spears, billhooks, 'dormitory houses' and traditional clothes (Devi 2017; Kamei et al. 2024).

Discussions with village elders during the author's fieldwork revealed that the engravings on megaliths served various purposes, such as recording contributions made by the dormitory to the village. The human figure engraved on the standing stone could represent the dormitory's caretaker. Youth dormitory members created engravings on clusters of dolmens, flat stones at the dormitory, and natural rock surfaces (Fig. 2) in streams during festivals to commemorate these events and showcase their possessions and activities. For example, vertical lines symbolise the height that youths reach while attempting to catch a *mithun*'s horn during festivals. Squares function as counting symbols (Fig. 3), reflecting the distribution of meat portions to villagers. Zoomorphic figures represent animals traditionally sacrificed during festivals and megalithic building ceremonies, whereas anthropomorphs depict members of the youth dormitory (Kamei et al. 2024).

Khoupum, in Noney District, is another significant petroglyph site inhabited by the Rongmei tribe. Earlier, L. Kunjeswori Devi (1988) reported about 50 engraved stones from this area, depicting footprints, gongs, game boards, wine jars, weapons, geometric designs and animal motifs. The present author's re-

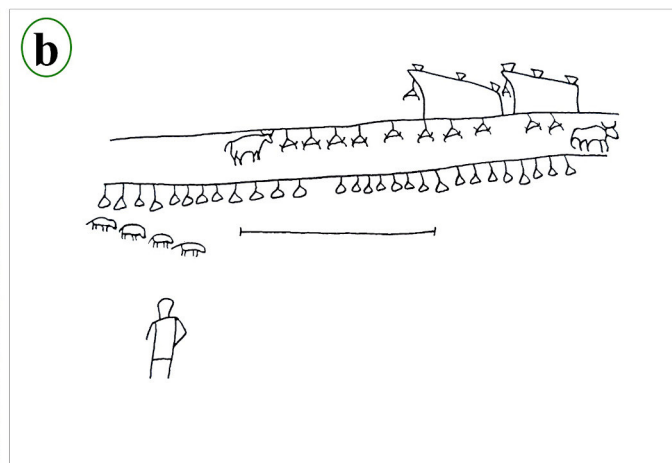


Figure 2. (a) Engravings from Tharon streambed showing an anthropomorph, four 'pigs', rows of suspended 'pig heads' and 'mithun heads', full 'mithun' figures, two 'house' motifs (likely dormitories), scale: 60.9 cm long; (b) illustration (not to scale) of the engravings.

State	Typological diversity				References
	Anthropomorphous	Zoomorphic	Geometric	Others	
Assam	Foot impression with flower encircling it, god and goddesses, female figurines, a dancing image, a running image with a shield and a boat, a footprint, human faces, and human figures depicted in various positions, such as sitting on seats or holding weapons like a twin-headed tanged spear adorned with necklaces and earrings,	Elephants, birds, lions	Chessboard, labyrinth, square with a circle inside, triangle, circle, simple lines, and a double circle having two parallel lines, double line square, concentric circles with intersecting lines	Temple-like structure with a shrine at the centre, dot marks in linear pattern, bow, inscription, Dharmachakra, lotus pedestal, mace, <i>trishula</i> , <i>vajra</i> , mason marks, wedge marks, sword, mask, celestial bodies, daggers, rosettes	Choudhury 1959; Bezbaruah and Devi 2016; Thakuria 2017; Sanathana and Hazarika 2019; Deori and Hassan 2019; Hazarika et al. 2022; Singh et al. 2022; Hutton 1923;
Mizoram	Human faces, rows of human figures with one central figure holding a spear and wearing a headdress, a human figure holding one spear on his right, his left hand holds an unidentified object, and rows of human figures hold the shoulders of one another, vertical rows of human heads, human figure holding a spear in the right hand and left hand in 'akimbo' position.	Bovine heads, deer, bird, fish, monkey, horn of <i>mithun</i> /buffalo, turtle, moorhen (?), giant squirrel (?), lizard, rows of animals, <i>mithun</i> , snake, tiger, elephant, hornbill, horses, <i>mithun</i> head	Circle, semicircle, double circle, circle with dots in the centre, circles in sequential line, square made out of two horizontal lines, a triangle between two legs (indicating female genital)	Blade, spearhead, bead necklace, smoking pipe, headgear, bangles, copper string belt, gun, ladder, shield, cup marks, pot, roman script, celt type weapons, gongs, cupules, spouted jars, earrings	Lalhmingshluah and Sarkar 2017; Jenla 2017; Singh 2019; Malsawmliana 2019; Singh 2021; Nayan and Singh 2022; Singh 2022
Meghalaya	Human face, a human figure in a squatting position,	Pigs, <i>Bos</i> species, depicted with horns, a bird		A pot or a gourd	Mitri et al. 2022
Nagaland	Human figure, human face carved on stone, human dancing figures	Elephants, tigers, deer, <i>mithun</i>	Circular, zigzag patterns, a lozenge pattern, a spiral	Spearheads and rows of incised tooth-like features, double indentation on the edge, stellar	Hutton 1922; Hutton 1926; Vasa and Jamir 2020
Manipur	Pair of footprints, single footprint, female genital organ, human figures, human head/skull, rows of human figures, male figure, female figure, human figure holding a jar, human figure holding a piece of stone, human figures holding weapons, male figure riding a horse and buffalo, good dress male figure in the standing position holding a weapon, a female and children, a hunting scene, and a female figure in a sensuous manner.	Birds, snakes, buffalo heads along with the horn, the head of a <i>mithun</i> , the head of a pig, a <i>mithun</i> , a rectangle, an elephant, a horse, a tiger, a deer, a doe, a pregnant buffalo, wild boar, scorpion, dinosaur-like creature, skulls of <i>mithun</i> and or wild buffaloes, yak, leopard	Circle, line drawing, trapezoidal figure, Triangle, gameboard	cupules, Bengali script with numbers, counting symbols, gong, trumpet, spear, billhook, dormitory house, traditional garment, basket, Game pattern, English script, sword, lotus, musical instrument, wine pot, gun, armlets/bracelets, shield, cross symbol, arrow	Mutua 1984; Devi 1988; Devi 1989; Devi 2017, 2020); Singh 2020, 2021; Haokip 2021; Suanlian 2024; Kamei et al. 2024

Table 2. State-wise typological diversification of the petroglyphs in northeast India.

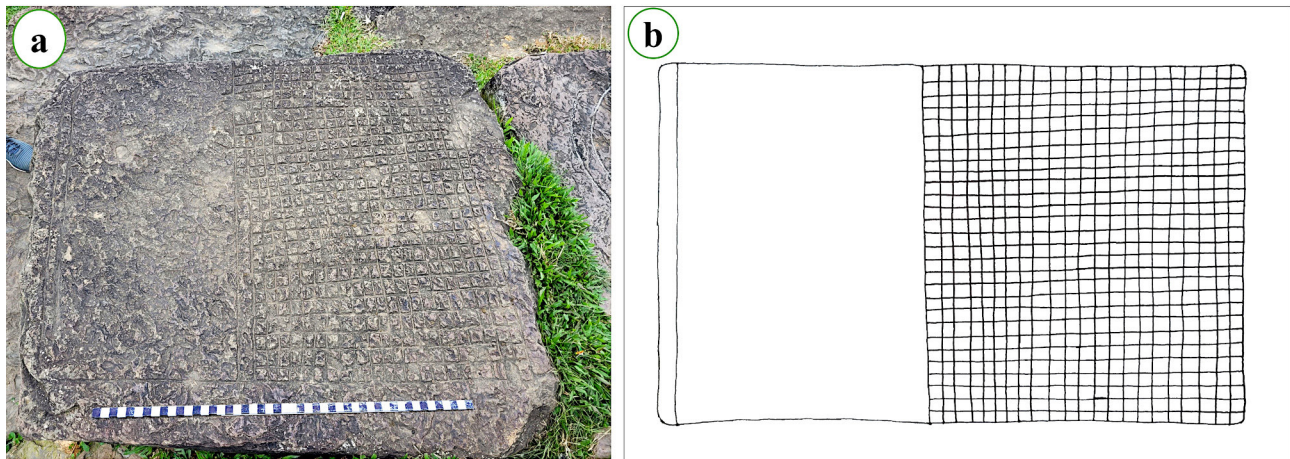


Figure 3. (a) 'Counting symbols' (scale 121.92 cm); (b) illustration (not to scale) of the engravings.

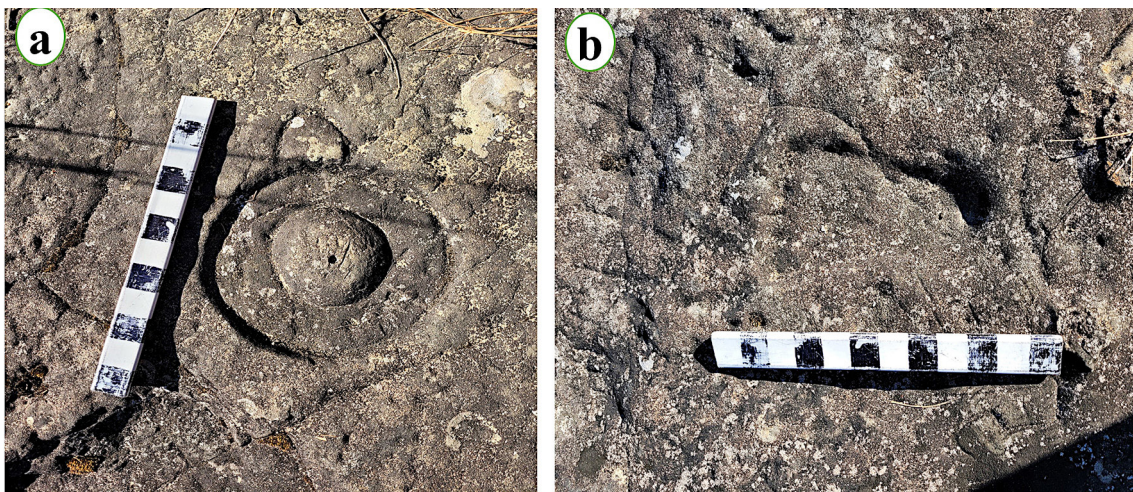


Figure 4. (a) Engravings of a 'gong' motif (musical instrument) at Khoupum; (b) a deeply carved footprint engraved on a natural flat stone at Khoupum (scale 30.48 cm).

cent field investigation confirmed these observations and documented additional engravings, including gongs, gameboard patterns and footprints (Figure 4), buffalo horns and concentric circles carved on megalithic stones such as flat slabs, sitting platforms, stone clusters, and on natural flat stone surfaces.

Interviews conducted with village elders suggest that these engravings were traditionally made by youth dormitory members during the *Matui Ngai* festival to commemorate feasting, hunting and dormitory achievements. According to their accounts, geometric figures, such as circles, represent ceremonial objects like gongs, plates and ornaments, while buffalo horns symbolise animals sacrificed during the festival. The elders also recounted that, in the past, a *bamduan* (sitting platform) was constructed outside the village gate for individuals who died unnatural deaths. Footprints and related motifs were engraved on the platform, along with symbols of animals sacrificed during the ritual. This practice, they explained, was intended to guide the lost soul toward the ancestral realm so it could receive blessings and join its forebears in the afterlife. These narratives highlight the enduring ritual

and commemorative significance of the Khoupum petroglyphs, even though their active practice has largely disappeared today.

Additionally, in Phalong/Bhalok village, Tamen-glong Khunjao village, and Pallong village, petroglyphs include anthropomorphous figures arranged symmetrically around a central figure, a chief or hero, footprints, a human head or skull, birds, a buffalo head, line drawings and gongs (Singh 2021). The petroglyphs at Phalong also feature scripts, numerals and distinctive weapons such as 'swords', 'spears' and 'shields' engraved onto megaliths like standing stones (Fig. 5) and flat stones, suggesting a comparatively later phase of engraving activity. During the present author's recent field visit, local informants explained that these engraved stones, known as *tathuan taosuam* ('victory tributes'), were created to commemorate acts of exceptional bravery, such as success in headhunting or the killing of dangerous wild animals. According to these accounts, the number of heads taken or animals slain was represented symbolically through the petroglyphs, serving as a lasting record of personal valour and social prestige.



Figure 5. (a) Standing stone with engravings; (b) illustration (not to scale) of the engravings (scale 60.96 cm).

Another site, the Salangthel megalithic site in Churachandpur District, once inhabited by the Rongmei tribe, has petroglyphs documented by Mutua (1984), who reported engraved footprint marks on a stone. The first detailed survey was carried out in 1989 by R. K. Tamphasana Devi; she documented eight stones with engraved sex symbols (female genital) with an additional four stone circles and one semi-rectangle, one stone seat, and engraved marks of headhunting symbols, footprints and counting symbols (small parallel lines) on stones (Devi 1989). Later, other scholars reported engraving figures such as footprints, counting symbols, female genital organs, circles (probably gongs) and depressed marks, which are significant, as they provide insight into the cultural and possibly ceremonial practices of the area's ancient inhabitants (Devi 1993; Singh 2021). The study commendably integrates oral histories from local communities, enriching the understanding of these archaeological findings in a sociocultural context.

Haokip (2021) provided a detailed exploration of newly discovered petroglyph sites, Chassa Kholui, Singat and Hiangtam Kul, along the southern border of Manipur. The petroglyphs display a variety of themes, including zoomorphs (elephants, tigers), anthropomorphs, hunting scenes and ritual activities. Motifs such as beads, gongs, ponies and firearms suggest longstanding trade relations and cultural exchanges with other regions, potentially dating back to pre-Historic times (Haokip 2021). Suanlian (2024) also examined the Zo tribe's inhabited areas of Indo-Myanmar's ongoing rock art activity, highlighting the art form's importance as a living tradition

that still shapes and reflects the social dynamics of the tribes today in addition to its status as a cultural artefact. The study profoundly elucidates how these petroglyphs function as historical records and social status markers in Zo villages. Not only are these engravings artistic representations of animals, humans and everyday activities, but they are also intricately linked to the tribes' cultural and ceremonial customs (Suanlian 2024).

The petroglyphs of Manipur display remarkable cultural depth and continuity, linking engraving traditions with the living memories of the region's present inhabitants. Found on memorial stones, sitting platforms and natural rock surfaces, these motifs—footprints, circles, anthropomorphs and zoomorphs are closely tied to ancestral commemoration and festivals. Ethnographic parallels among the Zeliangrong and other groups like the Zo tribe suggest that these engravings once marked spaces of social gathering and mortuary ceremony, serving as enduring symbols of belonging and remembrance. Collectively, Manipur's petroglyphs bridge the material and spiritual worlds, preserving ancestral narratives in durable form.

### Current challenges and future directions in the study and preservation of petroglyphs in northeast India

#### *Methodological challenges*

Research on petroglyphs in northeast India often encounters significant methodological challenges due to limited access to advanced technological resources and expertise. Employing more sophisticated dating techniques and digital documentation methods, such as laser scanning, structure-from-motion (SfM)

photogrammetry and reflectance transformation imaging (RTI), could improve the accuracy and quality of records (Carrero-Pazos et al. 2022). Currently, 3D modelling and digital imaging techniques are standard in the data acquisition and analysis of archaeological carved remains, such as rock art, inscriptions, or emblems (Robin 2015). There is a significant gap in comprehensive documentation across the numerous petroglyph sites in northeast India. Many sites have not been studied thoroughly and systematically, or the findings have not been adequately published. This lack of detailed documentation hinders the ability to conduct comparative studies and track changes or degradation over time. It also affects the potential for these sites to be recognised and protected as heritage sites. Future research should combine high-resolution digital documentation with ethnographic verification. Collaboration with research institutions such as the IG-NCA, IIT Guwahati, and the Archaeological Survey of India would enhance both precision and accessibility.

#### *Chronological uncertainty and the absence of definitive dating*

One of the primary limitations is the absence of definitive dating for these artworks. The lack of absolute chronological data makes placing these petroglyphs within a precise historical timeline challenging, leading to speculative chronological interpretations (Bezbaruah 2022). Systematic and rigorous dating methods are urgently needed to establish more accurate chronologies. Without such efforts, the dating of petroglyphs remains provisional and speculative, affecting the reliability of interpretations.

#### *Interpretative challenges and the role of oral tradition*

Although numerous petroglyph sites have been reported across Northeast India, most have not been systematically compiled or analysed alongside ethnographic data. Present-day materials play an important societal role, reflecting the continuity and use of materials in megalithic engravings from the past to the present (e.g. Lalhminghluva and Sarkar 2017). The absence of integrated ethnographic data limits a fuller interpretation of these petroglyphs' meanings and sociocultural contexts (e.g. Thakuria 2017).

At the same time, local oral traditions and ethnographic knowledge from indigenous communities are indispensable for interpreting rock art in this region. The tribal elders' recollections, ritual explanations and ancestral narratives often preserve cultural memories that are not visible in the archaeological record. Such knowledge provides vital insight into the social functions, ritual purposes and symbolic meanings of the engravings, helping to reconstruct links between the present and the past. However, while oral traditions offer a crucial interpretive framework, they must be critically examined and corroborated with archaeological and historical evidence. Overreliance on unverified accounts can lead to selective or

anachronistic interpretations that obscure rather than clarify the cultural and temporal context of the petroglyphs (Singh 2021). A balanced approach—valuing Indigenous knowledge while maintaining analytical rigour—therefore remains essential for advancing the understanding of northeast India's petroglyphic heritage.

#### *Preservation and conservation*

One of the most pressing issues regarding petroglyph sites is their preservation and conservation. Many of these sites are in remote or rural areas, making them vulnerable to natural weathering, human vandalism and neglect. Rapid urbanisation and infrastructure development, such as road construction and residential expansion, often destroy these archaeological sites before they can be adequately documented or studied. Petroglyph sites have significant potential for sustainable rock art tourism, as people are naturally interested in learning about the past (Srivastava 2021). Heritage and tourism campaigns can educate local communities on efficient land-use decision-making, ensuring proper environmental management and protection. Site museum-cum-parks can be created so that archaeological findings can be displayed for a better understanding of the site and the economic, social and cultural life prevalent in the past (Kumar and Banerjee 2021). These efforts require regular heritage management and promotion initiatives. Linking local areas in strategic projects, such as asset surveying, heritage management and conservation plans, will raise awareness and ensure the sustainable utilisation of these cultural treasures. Properly managed heritage assets can enhance and influence tourist activities.

#### *Community involvement*

Community involvement in archaeology entails engaging Indigenous peoples and other communities in various aspects of archaeological practice and interpretation (Marshall 2002). This inclusive approach effectively involves owners and stakeholders in protecting archaeological heritage. Benefits include promoting education about the past, making archaeology more relevant to contemporary communities, and bridging the gap between fieldwork, local communities and academia (Chirikure and Pwiti 2008). Involving local communities in preserving and studying petroglyphs can increase awareness and protection. Initiatives could include educational programs and community-based monitoring efforts. Addressing community concerns, such as safeguarding excavated areas and developing sites for tourism, is also essential. Engaging local communities enhances the sustainability of preservation efforts and ensures the maintenance of these cultural treasures for future generations.

#### **Discussion**

The petroglyphs of northeast India exhibit remarkable diversity in form, distribution and symbolism,

reflecting the region's complex social and cultural histories. From Assam's temple-associated rock engravings to the memorial and ritual stones of Manipur, Mizoram and Nagaland, the region's engravings express a mosaic of beliefs that link the living to their ancestors and the natural world.

Comparative analysis highlights both continuity and variation across state boundaries. The petroglyphs of Mizoram and parts of Manipur, for instance, share motifs such as gongs, bead necklaces, circles, triangles and figures of humans linking shoulders, as well as zoomorphic forms representing *mithun* and buffalo (Singh 2019, 2020). Despite these overlaps, progressive variations occur. Mizo petroglyphs often emphasise martial postures such as standing or squatting figures holding spears (Singh 2022), whereas the Manipur engravings tend toward commemorative and ritual symbolism. Likewise, the petroglyphs of Nagaland display human faces, dancing figures and lozenge or spiral patterns (Vasa and Jamir 2020), while those in Assam include mason marks, *dharmachakra* and wedge motifs associated with religious and architectural contexts (Sanathana and Hazarika 2019). The variations in petroglyph types across northeast India reflect differences in sociocultural background; the cognitive abilities of ethnic communities; and the influence of local ecology, myths, beliefs and folklore on the creation of these petroglyphs (Kamei et al. 2024).

Interpreting these motifs through an ethnoarchaeological lens allows for a deeper understanding of their sociocultural meanings. Anthropomorphs appear to embody gendered roles and authority, representing dancers, warriors or community leaders who performed key ceremonial functions. Zoomorphic images—especially *mithun*, elephants, buffalo and birds—symbolise wealth and animals killed during ceremonies, while geometric figures such as circles, spirals and cupules invoke cyclical and cosmological principles. Footprints symbolically link the living with ancestral or spiritual realms. In this way, form is directly connected to function: motifs operated as material expressions of social identity, cosmology and the continuity of life and death within community landscapes. The repetition of anthropomorphs and zoomorphs across the region suggests a shared cognitive foundation rooted in symbolic representation and ritual performance. The convergence of similar motifs across ecological and linguistic boundaries highlights the interconnectedness of the region's pre-Historic populations and the diffusion of symbolic traditions along ancient exchange routes.

The studies reviewed also demonstrate varied methodological approaches that contribute to this growing body of research. Field surveys and photographic documentation remain fundamental for recording petroglyphs, while the adoption of digital tools has improved accuracy and preservation potential. For instance, Haokip (2021) utilised geographic information systems (GIS) to map petroglyph sites

precisely, enhancing spatial analysis and interpretive reliability. Ethnoarchaeological approaches, as demonstrated by Suanlian (2024), integrate ethnographic insights with archaeological data, thereby deepening the understanding of social context and symbolic continuity.

Nonetheless, challenges persist. Many sites remain undocumented or inadequately recorded, and dating techniques are rarely applied. To address these issues, future research should pursue technological partnerships with specialists in remote sensing, photogrammetry and 3D laser scanning to enhance recording accuracy and facilitate digital preservation. Such collaborations could produce geospatial databases that allow researchers to examine regional patterning, motif distribution and landscape relationships systematically.

Preservation and conservation concerns are equally pressing. Remote location, natural weathering and increasing urban expansion threaten the survival of many rock art sites. Without sustained documentation and community engagement, numerous petroglyphs risk erasure before their academic and cultural value can be fully realised. Addressing these issues requires a multi-layered strategy combining advanced recording techniques, inter-institutional collaboration and the participation of local communities as custodians of heritage.

## Conclusion

The petroglyphs of northeast India constitute a rich but under-documented heritage that expresses the region's cultural diversity and continuity. Through an ethnoarchaeological approach combining field documentation, comparative analysis and interviews, this study demonstrates that rock engravings are embedded in living traditions of ritual, commemoration and social identity. They serve as visual testimonies of ancestral connection, valour and belief, linking the past with the present.

The synthesis of evidence across the region reveals both shared symbolic traditions and localised expressions of belief that together define the cultural identity of different communities of northeast India. Yet significant research gaps remain—particularly in chronological dating, motif classification, and inter-regional comparison—which must be addressed through collaborative and technologically informed studies. Continued neglect, unplanned development and natural weathering threaten to erase these invaluable records of human creativity and ritual life. Hence, prioritising documentation, conservation and community-based heritage management is imperative. Preserving the petroglyphs of northeast India is not only a scientific necessity but also a moral responsibility to safeguard the region's ancestral legacy for future generations.

### Acknowledgments

The author extends sincere gratitude to the village elders and community members of western Manipur for generously sharing their oral histories, cultural knowledge and insights during fieldwork. The author is deeply grateful to Prof. Dwipen Bezbaruah, Department of Anthropology, Gauhati University, for his supervision and academic guidance. The author further thanks the anonymous reviewers of RAR for their constructive comments and valuable suggestions. Some photographs in this paper were previously published in *Ancient Asia* (Kamei et al. 2024) and are reproduced here under the Creative Commons Attribution 3.0 (CC BY 3.0) license.

### Conflict of interest

The author declares no conflict of interest.

Jiangampou Kamei

PhD research scholar, Dept of Anthropology, Gauhati

University, India

Email: [jiangampou@gmail.com](mailto:jiangampou@gmail.com)

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